

# ANALYSIS AND TRENDING OF SUSPECT/COUNTERFEIT ITEMS AT DEPARTMENT OF ENERGY FACILITIES CY 2005

CAL ITEMS Suspected Mark List

GRADE 5 AND GRADE 8 FASTENERS OF  
UNKNOWN ORIGIN WHICH DO NOT BEAR ANY  
MANUFACTURER'S HEAD MARKS.

Grade 5  
GRADE 5 FASTENERS WITH  
MANUFACTURER'S HEAD MARKS

MARK  
J

Grade 8 FASTENERS  
HEAD MARKS

MARK  
A

MARK  
NF

MARK  
H

MARK  
M

MARK  
MS

MARK  
E

WLL-2T

GRADE 82 FASTENERS (BENNETT DENVER)  
WITH THE FOLLOWING HEAD MARKS

MARK  
A325 KS



OFFICE OF CORPORATE PERFORMANCE ASSESSMENT  
ENVIRONMENT, SAFETY AND HEALTH  
APRIL 2006

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SUSPECT/COUNTERFEIT ITEMS AT  
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CY 2005**

**April 2006**

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## EXECUTIVE SUMMARY

The Office of Environment, Safety and Health (EH) prepared this report to disseminate information on Department of Energy (DOE) suspect/counterfeit items (S/CI) and defective items (DI) or S/CI-DI. This annual report updates the S/CI report issued in April 2005 and includes data on S/CI-DI events reported in the Occurrence Reporting and Processing System (ORPS) between January 1, 2005, and December 31, 2005, as well as through the Government-Industry Data Exchange Program (GIDEP), the Institute for Nuclear Power Operations (INPO), and other miscellaneous sources. Because of these additional data sources, we are now able to identify more S/CI-DI events.

Within EH, the Office of Corporate Performance Assessment (EH-3) routinely collects, screens, dispositions, and communicates information on S/CI-DI that could potentially impact operations at DOE facilities. The following is a summary of S/CI-DI and related activities for calendar year 2005:

- ? S/CI-DI awareness training was provided to 1,951 attendees at 14 sites in 2005, which led to increases in the understanding of S/CI-DI issues and in S/CI-DI web site activity.
- ? The number of S/CI events reported in ORPS during 2005 (92) decreased from that in 2004 (113).
- ? No injuries or near misses resulted from S/CI-DI within the DOE Complex.
- ? In 2005, as in previous years, most of the S/CI reported in ORPS were fasteners, including those in ratchet straps or tie-downs.
- ? The number of DI events reported in ORPS during 2005 (19) was nearly unchanged from 2004 (18).
- ? EH-3 issued two Safety Alerts in 2005 related to S/CI-DI; one related to a respirator filter recall, and the other related to unauthorized marking of compressed-gas cylinders. EH-3 also began issuing Safety Bulletins in 2005 to address items with a lower level of safety concern than Safety Alerts. EH-3 issued six Safety Bulletins related to S/CI-DI in 2005.
- ? EH-3's achievements in 2005 in implementing the S/CI-DI process included the following:
  - ? Increased awareness through field training and website postings.
  - ? Updating the SCI Process Guide and Awareness Training Manual
  - ? Revising DOE O 414.1C, *Quality Assurance*, and its accompanying guide for S/CI, DOE G 414.1-3.

An electronic version of this report is also available at the S/CI-DI website (<http://www.eh.doe.gov/sci>).



# 1.0 INTRODUCTION

The Office of Environment, Safety and Health (EH) prepared this report to disseminate information on Department of Energy (DOE) suspect/counterfeit items (S/CI) and defective items (DI) or S/CI-DI. The Office of Corporate Performance Assessment (EH-3) routinely collects, screens, and disseminates information on S/CI-DI that could potentially impact operations at DOE facilities.

## 1.1 Background

This report updates summary information and trends for S/CI-DI identified at DOE facilities in 2005, and compares these data to historical data and trending information regarding S/CI-DI discovery and disposition. EH-3 searched the Occurrence Reporting and Processing System (ORPS) database and other data sources to identify S/CI-DI. These added sources included, but were not limited to, the Government-Industry Data Exchange Program (GIDEP) and the Institute for Nuclear Operations (INPO). EH-3 informed the DOE Complex of all S/CI-DI identified from these sources that it deemed applicable to DOE operations and used the information from the search results to trend and analyze S/CI-DI for calendar year 2005.

## 1.2 2005 Accomplishments

- EH-3 staff reviewed a total of 4,218 reports from a variety of sources that led to the issuance of 155 Data Collection Sheets (DCSs) that were posted on the SC-DI website in 2005.
- No near misses or injuries involving S/CI-DI were reported in 2005.
- EH-3 issued two Safety Alerts in 2005 related to S/CI-DI. The first Safety Alert involved a respirator filter recall (DCS 955). The second Safety Alert concerned untested compressed gas cylinders (DCS 973) used in safety applications such as fire extinguishers and breathing air. EH-3 also began issuing Safety Bulletins in 2005 to address items with a lower level of safety concern than Safety Alerts. EH-3 issued six Safety Bulletins related to S/CI-DI in 2005.
- During 2005, the number of SCI-related ORPS reports decreased from 113 in 2004 to 92 in 2005. However, the 2005 total is still well above the historical level of about 50 SCI-related reports per year.
- EH-3 conducted S/CI awareness training for 1,951 attendees at 14 sites in 2005. EH-3 continues to notice a greater number of questions on S/CI issues and ORPS reporting from sites that were trained.
- S/CI-DI web site statistics reflected significant traffic, with 7,366 downloads of 300 different documents. The number of registered users increased to 349 from 47 sites by the end of 2005, up from 257 at 43 sites by the end of 2004.
- EH-3 updated the S/CI Process Guide and Awareness Training Manual
- EH-3 revised DOE O 414.1C, *Quality Assurance*, and its accompanying Guide for S/CI, DOE G 414.1-3.
- During 2005, the Office of Inspector General and EH-3 continued to communicate S/CI issues to each other for items not reported through ORPS.
- EH-3 updated the S/CI web site to promote a more user-friendly experience.



- EH-3 sent eight e-mails to the field through a push-mail system to inform S/CI web site users of important new issues and information.
- EH-3 routinely updated the list of S/CI coordinators across the DOE complex to improve the S/CI communications network.

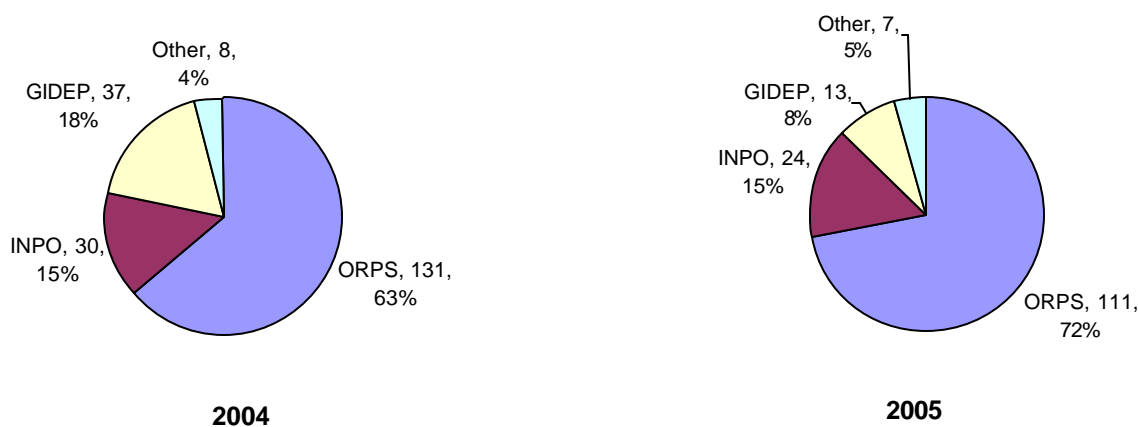
## 2.0 CURRENT STATUS OF S/CI-DI IN DOE FACILITIES

DOE Orders require sites to report discoveries of S/CI-DI in ORPS. In 2005, the number of S/CI occurrences reported decreased Complex-wide compared with 2004, but remained well above historical averages. The average over the past several years has been about 50 per year, with 111 reported in 2005 and 131 reported in 2004. During 2005, there were 92 S/CI and 19 DI reports versus 113 S/CI and 18 DI reports in 2004

### 2.1 Sources of S/CI-DI

EH-3 monitors two types of S/CI-DI events: those that occur at DOE facilities and are reported through ORPS; and those at other governmental and industry locations that are reported primarily by GIDEP and INPO. EH-3 reviews these events to determine DOE applicability and their potential impact on safety. For events that have potential safety impact at DOE sites, a Data Collection Sheet (DCS) is prepared to capture the relevant information from ORPS, GIDEP, INPO, and other sources and is posted on the S/CI-DI web site (discussed in section 4) to communicate beneficial lessons-learned information. Other vehicles for disseminating S/CI-DI information are discussed in section 2.3. Figure 1 shows the distribution of posted DCSs by reporting agency.

**Figure 1. S/CI-DI by Reporting Agency in 2004 and 2005**



### **2.1.1 ORPS**

The DOE complex submitted 1,758 ORPS reports in 2005, all of which EH-3 reviewed. DCSs were prepared and posted for 92 S/CI and 19 DI. The content of these reports and observed trends in the DOE Complex are discussed in section 2.2.

### **2.1.2 GIDEP**

During 2005, EH-3 reviewed 311 reports to GIDEP and prepared 25 DCSs from GIDEP submissions that it determined could have potential safety impact and DOE applicability. An EH-3 team performed an interactive review and, where appropriate, consulted with subject matter experts. The review resulted in 12 DCSs being marked for no further action. The remaining 13 DCSs were posted on the web site. DI events identified in ORPS were later submitted to GIDEP through the lessons-learned process. Five of the posted GIDEP DCSs were categorized as S/CI and eight were categorized as DI, including four Consumer Product Safety Commission (CPSC) recalls. Both the number of reports reviewed and the number of DCSs posted were significantly reduced from 2004 (37 DCSs posted from 514 reports reviewed). The decline in the number of DCSs reflects the combined effect of a reduced number of reports available for review and feedback from the EH-3 review process.

### **2.1.3 INPO**

During calendar year 2005, EH-3 reviewed 2,149 INPO reports, from which 24 DCSs were posted. These 24 DCSs were all categorized as defective. Five additional INPO DCSs were reviewed by EH-32, determined to not have significant DOE applicability, and not posted. The number of reports and DCSs is comparable with those from 2004 (30 DCSs from 2,222 reports reviewed).

### **2.1.4 Other Sources**

EH-3 posted seven DCSs from other miscellaneous sources, including the DOE lessons-learned system and informal communications from other DOE offices and other federal agencies. Two of these DCSs addressed S/CI and five addressed DI. In 2004, eight DCSs were prepared from other miscellaneous sources.

The presence of miscellaneous data sources continues to be an indicator of the routine communication occurring among EH-3, the S/CI coordinators in the field, the staff of the Office of Inspector General, and other interested parties. In addition to reported events, this communication has contributed to improvements in training materials and, in general, a better understanding of S/CI-DI issues.

## **2.2 Recent S/CI-DI Occurrences in DOE**

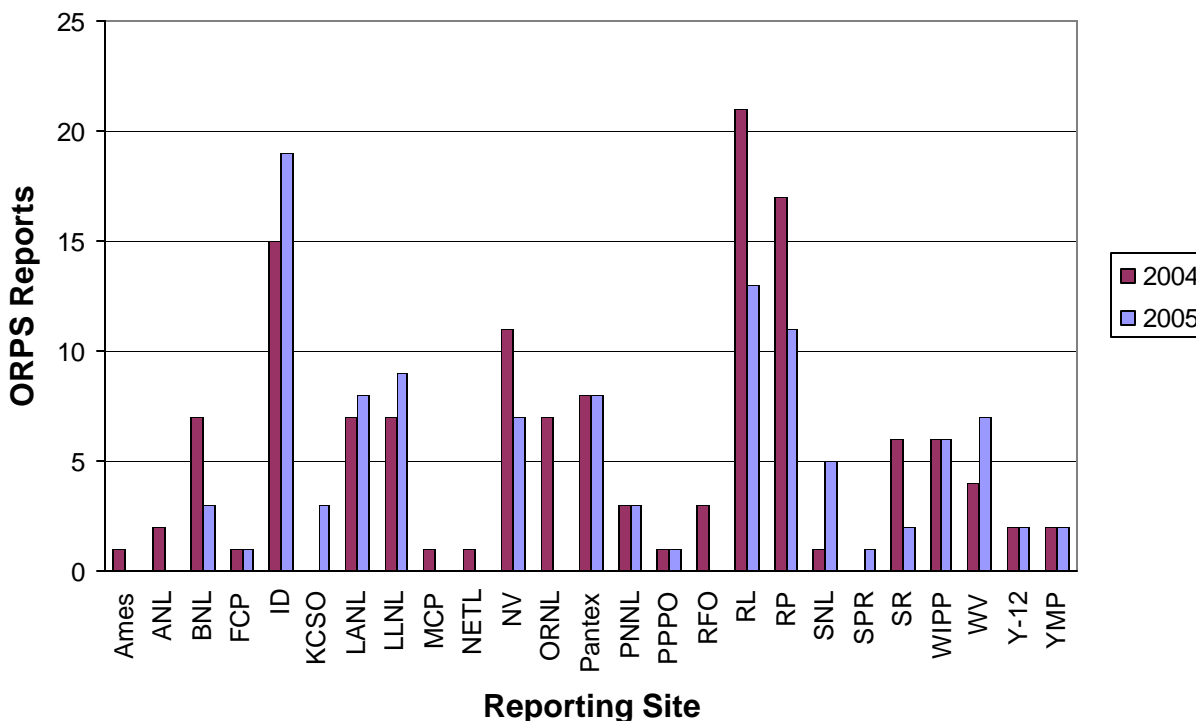
Because S/CI-DI events are required to be reported in ORPS, the data can be analyzed and used for lessons learned and process improvement. Events reported in 2005 are categorized in this section by the site where the items were found, status of use, and item type.

### **2.2.1 Distribution of S/CI-DI by Operations/Field Office**

In 2005, the ORPS numbering system changed to reflect the current organizational arrangements within DOE, including site consolidations and replacement of some Field and Area Offices by Regional Offices. The data shown in Figure 2 are organized by current site

office designations, which, for example, results in Argonne National Laboratory–West data being reported under Idaho rather than separately reported as it was before. Nineteen sites reported S/CI-DI in 2005, and 23 sites reported in 2004. This reflects the impact of sites nearing closure (Rocky Flats and Mound, for example) and normal reporting variation for small sites. The Idaho, Richland, and River Protection Sites each submitted 10 or more reports in 2005; six other sites submitted between five and nine reports. By comparison, four sites submitted 10 or more reports in 2004 and seven sites submitted between five and nine reports. Figure 2 shows reporting for 2004 and 2005.

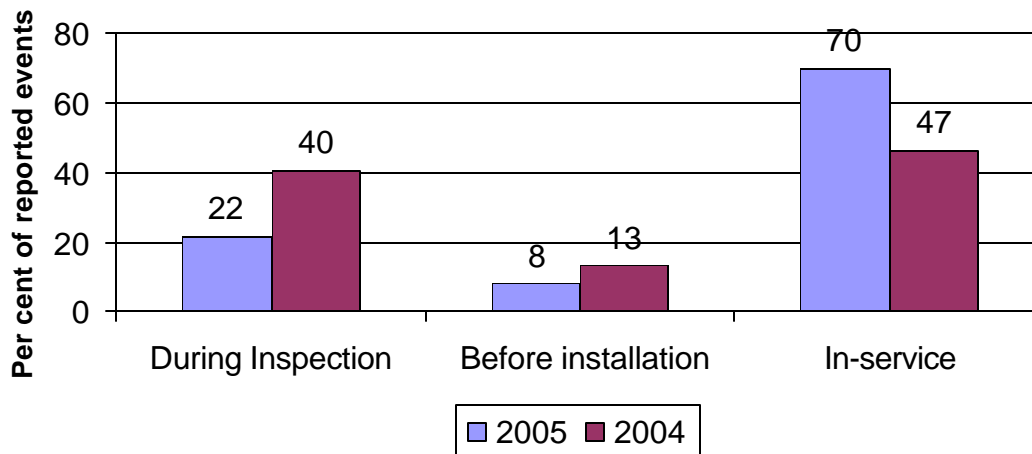
**Figure 2. ORPS Reports by Site in 2004 and 2005**



### 2.2.2 Use Status of S/CI-DI When Discovered

S/CI-DI events reported in ORPS were analyzed to determine at what stage of use they were found in the field. EH-3 categorized events into three areas: found during receipt inspection, found before installation, and found in-service. Figure 3 displays S/CI-DI by use status when found in the field during 2005 and 2004, respectively.

**Figure 3. When Were SCI-DI Found?**



Thirty percent of the S/CI-DI reported in ORPS in 2005 were found during receipt inspection or before installation, and 70 percent were found in-service. For 2004, 53 percent were found during receipt inspection or before installation and 47 percent were found in-service. This indicates that more items are found after being placed in service. This trend may reflect less emphasis on receipt inspection of purchased items or it may simply indicate continued discoveries of legacy fasteners.

### **2.2.3 Categories of S/CI-DI Found in the Field**

As in previous years, fasteners dominated S/CI reporting in ORPS with 78 of 92 posted DCSs. Nine of the fastener DCSs addressed ratchet straps or tie-downs, a sharp decline from the 24 reported in 2004. This may reflect site-level activities to correct this problem. Another 27 DCSs addressed fasteners that had been installed in heavy equipment, including forklifts, cranes, manlifts, and trailers. Other significant S/CI categories (non-fasteners) reported in ORPS included hoisting and rigging equipment, valves, and fittings. Six of the ORPS DCSs identified multiple equipment categories (e.g., fasteners and rigging, fasteners and valves).

Figure 4 shows the types of items reported in ORPS in 2004 and 2005. Again, as in previous years, the number of DI reported through ORPS was considerably fewer (19 DCSs) than S/CI. The two largest categories were safety equipment (nine DCSs) and valves and fittings (five DCSs).

Respiratory protection equipment was a significant issue in 2005 reporting, with five DCSs addressing this issue. These DCSs led to a Safety Alert and two Safety Bulletins, which are discussed in section 2.3. EH-32 staff have worked closely with EH-52, the Office of Worker Protection Policy and Programs, in disseminating this information through both the S/CI-DI and Respiratory Protection communities.

**Figure 4. Categories of SCI-DI Reported in ORPS in 2004 and 2005**

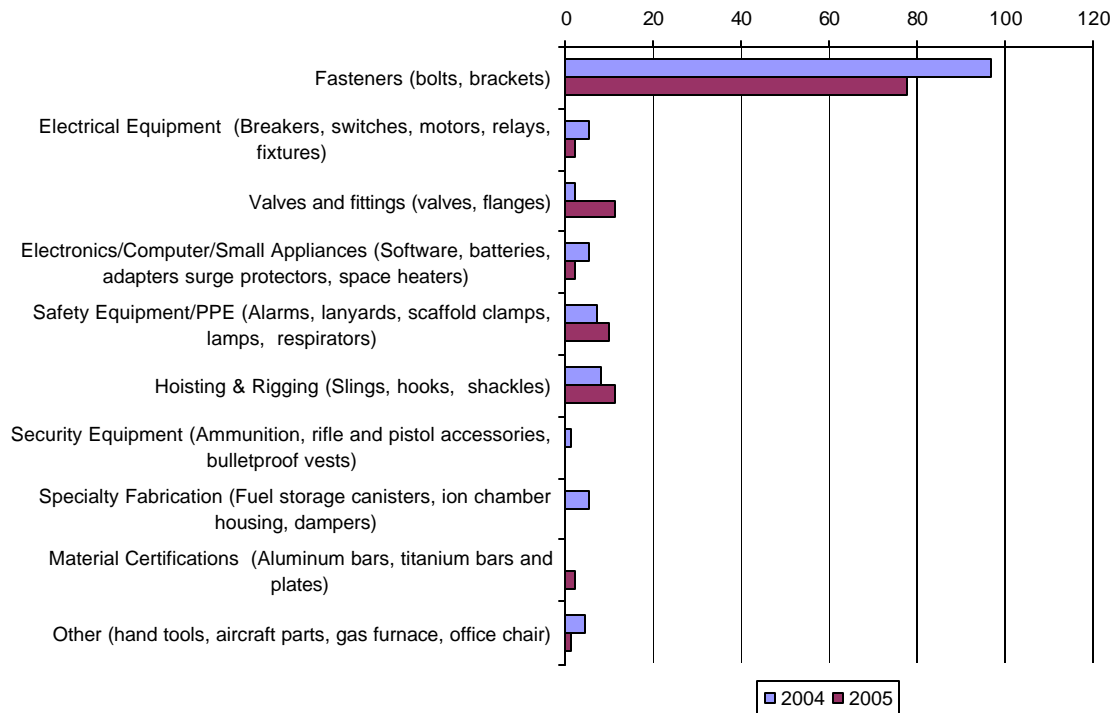
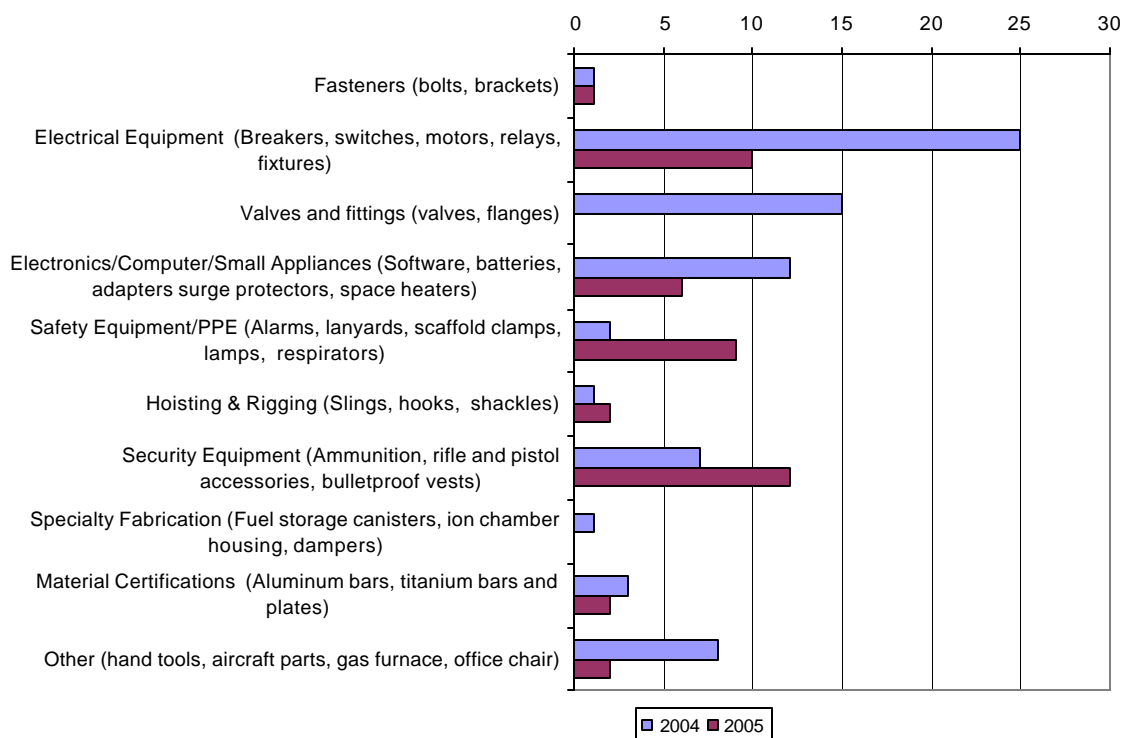


Figure 5 compares the categories reported in ORPS for S/CI-DI for 2005 and 2004 respectively. No real shift in types of items reported is apparent. Table 1 provides a more detailed breakdown of categories for 2005.

**Figure 5. Categories of SCI-DI from Non-ORPS Sources in 2004 and 2005**



**Table 1. Categories of ORPS-Related SCI-DI Found in the DOE Complex (2005 DCSs)**

<b>Equipment Category</b>	<b>ORPS SCI</b>	<b>ORPS DI</b>	<b>ORPS Total</b>
Fasteners (bolts, brackets)	78	0	78
Electrical Equipment (breakers, switches, motors, relays, fixtures)	0	2	2
Valves and fittings (valves, flanges)	6	5	11
Electronics/Computer/Small Appliances (software, batteries, adapters surge protectors, space heaters)	0	2	2
Safety Equipment/PPE (alarms, lanyards, scaffold clamps, lamps, respirators)	1	9	10
Hoisting & Rigging (slings, hooks, shackles)	11	0	11
Security Equipment (ammunition, rifle and pistol accessories, bulletproof vests)	0	0	0
Specialty Fabrication (fuel storage canisters, ion chamber housing, dampers)	0	0	0
Material Certifications (aluminum bars, titanium bars and plates)	1	1	2
Other (hand tools, aircraft parts, gas furnace, office chair)	1	0	1
<b>Totals</b>	<b>98</b>	<b>19</b>	<b>117</b>
<i>Note: Six S/CI DCSs included more than one item category (e.g., fasteners and hoisting and rigging), so the totals exceed the actual number of ORPS DCSs.</i>			

#### **2.2.4 Categories of S/CI-DI from Non-ORPS Sources**

No single category dominated the items reported from non-DOE sources. In contrast with the items reported in ORPS, most items (37 of 44) were DI rather than SCI (7 of 44). Major categories reported were security equipment (12), electrical equipment (10), safety equipment (9), and electronics (6). In 2004, the main categories were electrical equipment (25), electronics (15), safety equipment (12), and security equipment (7). One DCS addressed fasteners on a forklift steering mechanism that had failed in service.

Several items from non-ORPS sources prompted push-mail notification to S/CI web site registered users, and two Safety Alerts were issued based on these sources. Figure 6 compares the categories reported in non-ORPS sources for S/CI-DI for 2004 and 2005 respectively. No real shift in types of items reported is apparent. Table 2 provides a more detailed breakdown of categories for 2005.

**Table 2. Categories of Non-ORPS-Related SCI-DI Found in the DOE Complex (2005 DCSs)**

0	1	1	
4	6	10	
0	0	0	
0	6	6	
1	8	9	
0	2	2	
0	12	12	
0	0	0	
2	0	2	
0	2	2	
<b>7</b>	<b>37</b>	<b>44</b>	
			SCI



In general, ORPS reports do not list non-ORPS sources. However, data relating to S/CI website access continue to indicate that there is a following of DOE staff personnel who routinely view and download newly posted GIDEP and INPO DCSs. At least one ORPS report was generated based on an investigation prompted by a previous ORPS DCS (DCS 983, LANL Response to Sherwood Harsco Gas Valve Safety Notice). This suggests that, at a minimum, these personnel consider the potential applicability of these items at their facilities. The intent of searching the INPO database is to find lessons learned in the S/CI-DI area from the commercial nuclear industry that may apply to DOE. INPO data are generally similar to the ORPS DI, including electrical equipment, security-related items, and safety equipment. This suggests that DOE sites could identify similar items and report them in ORPS. The similarity between the vehicle security barrier issues reported in Safety Bulletin 2005-02 and similar INPO reports in DCSs 909 and 936, Defective Stinger Barriers, supports this premise. However, ORPS reports tend to be brief and factual and often do not provide background reference material. This makes it very difficult to assess the actual impact from disseminating the non-ORPS source material. The intent of GIDEP searches is to find lessons learned in the S/CI-DI area from other government agencies and private industry that may be applicable to DOE. GIDEP DCSs lean heavily to defective electrical equipment and electronics. S/CI do not figure prominently in either INPO or GIDEP data.

The most striking difference in comparing ORPS to the non-ORPS data is the virtual absence of S/CI fasteners in the non-ORPS data. However, in 2005, one GIDEP DCS dealt with fasteners that had failed in service. The failure was characterized as a defective item, probably because of the manufacturer's active cooperation in recovering from the incident. Historically, the DOE Complex has mostly identified suspect bolts, starting in 1993 and continuing to the present. This is due to the visuals provided in the training and distribution of visual identification aids such as Suspect-Counterfeit Headmark Lists and cards. More recently, the training has been modified to include valves and rigging equipment, and those areas are both represented in the ORPS S/CI data.

## **2.3 Focused SCI-DI Communication**

The S/CI-DI web site forms the backbone for disseminating S/CI-DI to the DOE Complex for lessons-learned use. However, some events are more urgent or are of interest to a larger audience, warranting a more active communication vehicle than web browsing. EH-3 has used a variety of focused communications vehicles in 2005, including push mails, OE Summary articles, Safety Alerts, and Safety Bulletins, as discussed below.

### **2.3.1 EH Safety Alerts**

During 2005, EH-3 issued two Safety Alerts. Safety Alerts are items that EH-3 believes command immediate attention from the Complex. Safety Alerts are issued under the authority of the Deputy Secretary and require formal positive and negative responses, in addition to appropriate action. Summaries of the 2005 Safety Alerts and the responses to them are summarized below.

*Safety Alert 2005-01: Respirator Filter Recall* provided information and requested immediate action regarding a recall notice issued by the Mine Safety Appliance Company (MSA). MSA issued the recall when it discovered that some Comfo® P100 and P3 Respirator Filter Cartridges may not provide the minimum particulate filter efficiency level of 99.97 percent required by the National Institute for Occupational Safety and Health (NIOSH) for a P100 class filter and

initiated a recall of affected filters. A failure of respiratory protection could result in personnel exposures to hazardous atmospheres. For many DOE applications, this could result in chemical exposures or radiological uptakes. Safety Alert 2005-01 requested DOE site managers to verify inspection of all MSA Comfo P100 and P3 Respirator Filter Cartridges and to remove from service any cartridges found that are affected by the MSA recall. In addition to the initial report from the Idaho National Laboratory, seven other sites reported finding and removing affected filter cartridges. All other sites provided negative responses.

*Safety Alert 2005-02: Untested Compressed-Gas Cylinders* provided information and requested immediate action in response to a Safety Advisory issued by the U.S. Department of Transportation (DOT) in the Federal Register regarding the alleged failure of a supplier to hydrotest compressed-gas cylinders used for fire extinguishers, self-contained breathing apparatus, and oxygen bottles. Site managers were directed to review their procurement records to identify and remove from service any compressed-gas cylinders acquired from All-Out Fire Equipment Co., Inc. of Holbrook, New York. Negative responses were received from all sites; i.e., none of the affected cylinders was found at DOE sites.

### **2.3.2 EH Safety Bulletins**

During 2005, EH-3 issued six Safety Bulletins that addressed S/CI-DI issues. Safety Bulletins are issued to share information and recommend actions on potential safety issues. Safety Bulletins are issued under the authority of the Assistant Secretary for Environment, Safety and Health (EH-1) and usually require formal response or action from affected sites. Summaries of the 2005 Safety Bulletins and the responses to them are listed below.

*Safety Bulletin 2005-02: Potential Problems with Active Vehicle Security Barriers* (DCS 887) describes an incident where the security barrier at the main gate to the DOE Germantown campus inadvertently activated and collided with a commercial vehicle entering the facility, causing minor personnel injuries and vehicle damage. EH-1 directed a Limited-Scope Accident Investigation. The Accident Investigation Board determined that three similar occurrences had been reported since July 2004 involving inadvertent activation of security barriers. In the interest of preventing future incidents of this type, EH-3 issued Safety Bulletin 2005-02 to inform the Complex of the potential problems with vehicle security (delta) barriers. The Safety Bulletin recommended actions related to pre-operational testing, preventive maintenance, configuration control, and personnel actions to be taken. In addition, the Bulletin requested site feedback on findings, including any deficiencies and resultant corrective actions. Responses were received from five sites. Corrective actions were generally minor; e.g., scheduling preventive maintenance or putting new covers on control boxes.

*Safety Bulletin 2005-05: Defective Airline Respirator Hoses* (DCS 883) addressed a defect in airline respirator hoses manufactured by Scott Health and Safety that can result in a severe reduction of airflow. This condition was identified at the Hanford Site. The reduction of airflow represents a significant hazard to personnel because these hoses are commonly used at sites across the DOE Complex to allow workers safe access to highly contaminated areas. The Bulletin requested site managers to inspect their airline respiratory equipment and report any deficiencies in ORPS. To date, the original Hanford report is the only ORPS report on this subject.

*Safety Bulletin 2005-10: Vertical-Rail Fall Protection* (DCS 934) described a reported failure that occurred at the Idaho National Laboratory (INL) where the top of the rail (Figure 6, right) detached from the structure, rendering it ineffective for fall protection. Vertical-rail fall protection systems are used at sites throughout the DOE Complex to provide safe access to elevated structures. Correct design, installation, and maintenance of these systems are essential for worker safety. While no formal responses to this Bulletin were received, several field S/CI-DI coordinators called about it. Most had reviewed their systems and found no fall-protection systems that were similar.



**Figure 6. Vertical-rail fall protection system that failed**

*Safety Bulletin 2005-14: Respiratory Protection Incidents* highlighted recent respirator failures in the DOE Complex that emphasize the importance of maintaining a comprehensive and effective respiratory protection program. Respiratory protection is a vital tool for safe work in hazardous and contaminated atmospheres, and respirators are widely employed in accomplishing the DOE mission. This Bulletin requested site managers to review their respiratory protection programs to ensure compliance with DOE O 440.1A. The Respiratory Protection Group continues to closely monitor programmatic issues and developments. Need to speak with Marsick.

*Safety Bulletin 2005-15: Battery Booster Explosions* provided information on Solar Truck Pac® model ES1224 battery boosters manufactured by Clore Automotive that exploded. Specifically, the Office of River Protection at Hanford reported an explosion following an attempt to jump-start a crane using a model ES1224 booster. Two other reports of similar events in commercial facilities were reported in November 2005. EH-3 contacted the manufacturer and received helpful information regarding the hazards associated with overcharging the booster. The battery contained in the booster can be overpressurized by overcharging, which can breach the battery cell seals. Compromising the cell seals creates both an immediate and a continuing hydrogen explosion potential. The Bulletin requested sites to examine their inventories of battery charging equipment, remove any model ES1224 boosters from service to verify battery cell seal integrity, and report any anomalies to ORPS. To date, no additional OPRS reports have been received on battery boosters.

*Safety Bulletin 2005-16: Boiler Safety Valve Test Failures* described test failures on boiler safety valves at INL where the pressure safety valves failed to relieve at the required pressure. Serious injury or property damage can result from failure of a pressure safety valve to operate when needed. These valves had been adjusted by the valve distributor to a higher pressure setpoint than that specified for the boiler system because of non-DOE customer complaints about valve chatter. Sites were requested to review their procurement documentation to determine whether they had procured any ASME Section I safety valves from the distributor, test any identified

valves, and report any nonconforming valves in ORPS. To date, no additional nonconforming boiler valves have been reported in ORPS.

### **2.3.3 Operating Experience Summaries**

Operating Experience (OE) Summary articles are intended to reach a broader audience than the registered S/CI-DI web site users, generally including facility management and safety personnel. An article in OE Summary 2005-02 highlighted three Consumer Product Safety Commission announcements of voluntary recalls of batteries for Kyocera and Verizon cell phones. Some of the recalled batteries may be counterfeit and pose a burn hazard to consumers due to the potential for short circuits and overheating. Approximately 1.2 million battery packs were affected by these recalls. This was the only OE summary article related to S/CI-DI published in 2005.

### **2.3.4 Push Mail Notices**

During 2005, EH-3 e-mailed eight selected DCSs (push mails) directly to the S/CI-DI web site registered users. These push mails described items that EH-3 judged to be worthy of immediate attention, and, in some cases, preceded the issuance of Safety Alerts and Safety Bulletins. These push mail notices are summarized below.

DCS 860, *Miller Shadow Beam Anchor Recall* provided information on a recall notice issued for Miller Models 8814-12 and 8814-24 Shadow Beam Anchors manufactured between November 14, 2002, and December 10, 2004, which are used in fall protection. According to the manufacturer, the plunger pin assembly can be damaged under certain conditions. As a result, the service life of the product could be compromised and the problem could be difficult to detect through an end-user inspection. The manufacturer requests that the units be returned for retrofit or replacement. No injuries or damage due to this problem have been reported to date. This push mail was based on information originally received from the Hanford Site.

DCS 894, *Scott Respirator Mask Safety Notice* notified registered users that the Scott Health and Safety Division of Tyco issued a Safety Notice regarding a potential defect in their model AV-3000 respirator facepiece. The affected respirator facepieces exhibit cracking in the lens frame, which can lead to loss of protection from hazardous atmospheres. The manufacturer provided detailed instructions on mask inspection and actions to take if defects were found. These respirators are commonly used at sites across the DOE Complex to allow workers safe access to highly contaminated areas.

DCS 904, *Bosch Circular Saws Consumer Product Safety Notice* provided information on a Consumer Product Safety Commission Recall for Bosch circular saws. The lower blade guard on these saws can malfunction, creating a risk of injury as severe as amputation. Bosch has received three reports of malfunctioning lower guards, including one that caused an amputation.

DCS 955, *MSA Filter Cartridge Testing Notice* [subsequently issued as Safety Alert 2005-01] provided information on a manufacturer recall of MSA Comfo® P100 respirator filter cartridges that were manufactured between November 2004 and June 2005. This push mail originated from information provided by INL personnel.

DCS 960, *Battery Booster Explosion* [subsequently issued as Safety Bulletin 2005-15] described an incident where a battery booster exploded at Hanford while being used to jump-start a crane.

DCS 973, *Unauthorized Marking of Gas Cylinders* [subsequently issued as Safety Alert 2005-02] provided information about potentially fraudulent certification of hydrotesting of compressed-gas cylinders used for fire extinguishers, oxygen tanks, and self-contained breathing apparatus.

DCS 978, *Skyjack Hydraulic Lift Inspection Notice* provided information on a potential safety issue with SkyJack® Model SJM3219 scissor lifts. The manufacturer issued two service bulletins on this model on March 9, 1998, and July 17, 2000, which specify mandatory structural inspection and repairs. Several organizations have recently issued safety notices regarding this equipment. The manufacturer also recently issued a letter addressing this issue with both of the earlier service bulletins. Structural failure of a scissor lift can result in serious injury or death.

DCS 994, *Suspect-Counterfeit Reinforcing Steel* described an event at the Lawrence Livermore National Laboratory where suspect/counterfeit rebar was discovered during construction receipt inspection. The procurement specifications required domestic material and certifications were presented that indicated domestic material was being supplied. However, the rebar received was marked "Mexico." A Spanish-language version of this DCS was also posted.

### 3.0 TRAINING

EH-3 conducted training at 14 sites during 2005, with 1,951 persons in attendance. Table 3 shows the training conducted in 2003, 2004, 2005, and scheduled in 2006. Figure 7 depicts training attendance by site. The rotation for sites to receive refresher training will commence in fiscal year 2006.

**Table 3. S/CI Training Conducted and Scheduled Under the Office of Corporate Performance Assessment S/CI Process**

<b>2003 Training</b>	<b>Site</b>	<b>Number Attending</b>
October 15	Headquarters Forrestal Bldg. SCI Kickoff Conference	
<b>2004 Training</b>	<b>Site</b>	<b>Number Attending</b>
April 12-16	Nevada Site Office and Yucca Mountain	325
April 27-29	Savannah River Site	325
May 18-19	Hanford and Richland	200
June 2	Prince Plasma Physics Laboratory	60
June 3-4	Brookhaven National Laboratory	70
June 14-15	Sandia National Labs and Albuquerque Site Office	110
June 16-17	Pantex Plant	40
August 9-13	Idaho National Engineering and Environmental Lab.	630
September 20	Waste Isolation Pilot Plant (WIPP)_	57
October 19-21	Chicago Operations Office, Fermilab, New Brunswick Lab	480
November 3	DOE Headquarters Wash, D.C.	17
November 4	Thomas Jefferson Lab	50

November 5	National Reconnaissance Office	10
November 15-18	Los Alamos National Laboratory/Los Alamos Site Office	250
<b>TOTAL 2004</b>		<b>2,624</b>

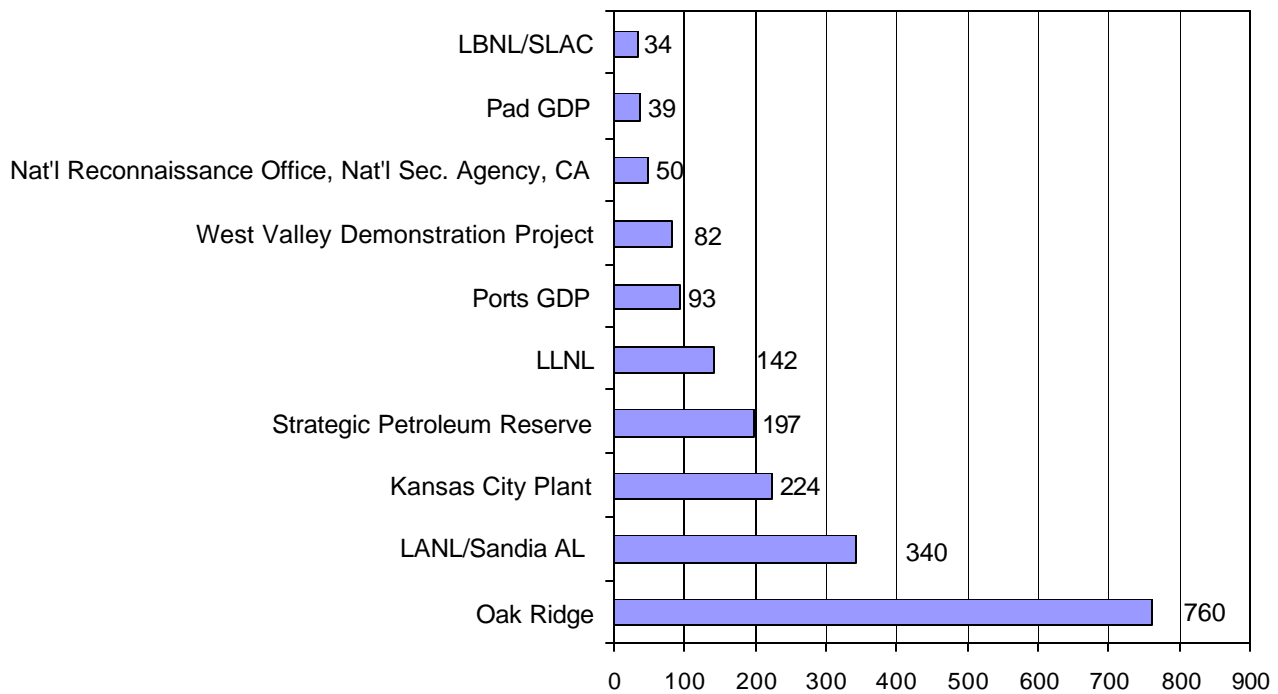
<b>2005 Training</b>	<b>Site</b>	<b>Number Attending</b>
January 10	Lawrence Berkeley National Laboratory/Stanford Linear Accelerator Facility	34
January 11-13	Lawrence Livermore National Lab	142
March 7-10	SPR (Bryan Mound, TX; Big Hill, Winnie, TX; West Hackberry, LA; New Orleans, LA)	197
March 14-18	Oak Ridge	760
April 18-19	West Valley Demonstration Project	82
May 9-11	Kansas City	224
October 3-7	Los Alamos National Laboratory Sandia National Laboratories	340
November 2	National Reconnaissance Office, National Security Agency Santa Maria, CA	50
November 7	Portsmouth Gaseous Diffusion Plant	93
November 9	Paducah Gaseous Diffusion Plant	39
<b>TOTAL 2005</b>		<b>1,951</b>

<b>2006 Training</b>	<b>Site</b>	<b>Number Attending</b>
January 23-26	Nevada Test Site/ Yucca Mountain	290
March 7-9	Savannah River	243
March 14-15	Pantex	239
March 16	WIPP	24
<b>PLANNED 2006</b>		
October 2-5	Hanford	
October 17-19	Brookhaven Nat'l. Laboratory Princeton Plasma Physics Laboratory	
November 14	Government Industry Data Exchange Program, CA	
November 15	Lawrence Berkeley National Laboratory	
November 16	Lawrence Livermore National Laboratory	

Three separate training modules have been developed for craftspeople, management, and procurement/inspection personnel to emphasize each group's specific role in implementing the S/CI-DI process. Each site selects the desired modules and number of sessions.

The *Suspect Counterfeit Items Awareness Training Manual* was last updated in April 2006, and is available on the S/CI-DI web site at (<http://www.eh.doe.gov/sci>). This manual is updated as new information becomes available.

**Figure 7. 2005 S/CI Training Attendance by Site**



## **4.0 S/CI-DI WEB SITE**

EH-3 established the S/CI-DI web site in September 2003 to facilitate communication of S/CI-DI information to DOE Federal and contractor employees. This web site is maintained at (<http://www.eh.doe.gov/sci>). Users must register for a password to gain access to restricted information. Each DCS generated that has been reviewed and determined to have potential applicability to DOE operations is posted to the web site under S/CI or DI, and is archived (but still retrievable) after 6 months. New items are highlighted, and the site features topical search capability.

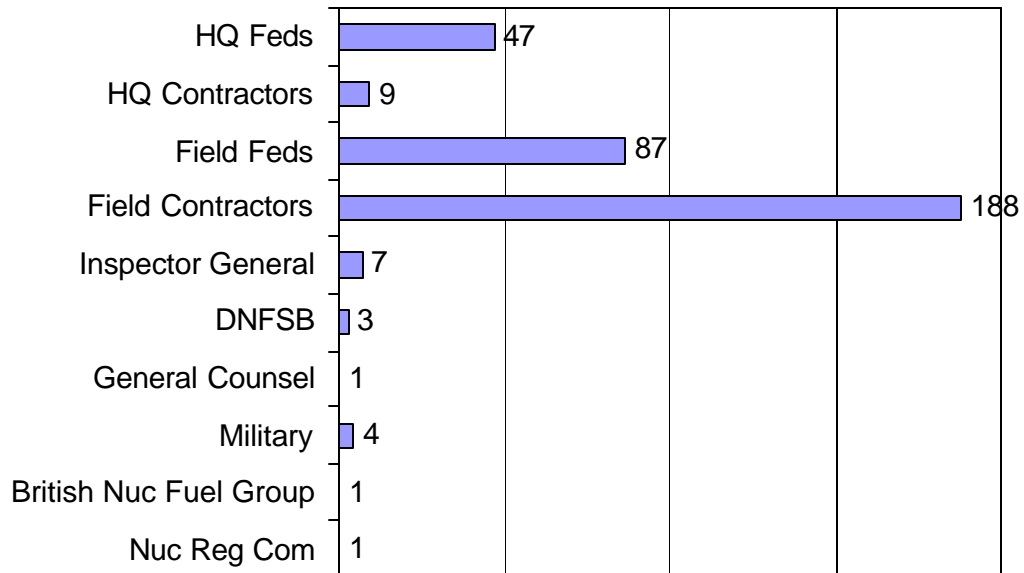
DCSs generated from ORPS reports contain the information taken from the initial report. Because of this, EH-3 checks final ORPS reports and updates information on the web site as necessary.

Figures 8 and 9 below illustrate the numbers of registered users having access to the password-protected areas of the S/CI-DI website as of December 31, 2005. This number has risen 36 percent, from 257 users of the website in 2004 to 349 by December 31, 2005. The number of sites with registered users has risen 9 percent from 43 in 2004 to 47 (42 DOE sites plus 3 military sites, the Nuclear Regulatory Commission, and the British Nuclear Fuels Group in Sellafield, England) through 2005. Representatives from DOE Headquarters in Washington, DC and the Office of Inspector General also have registered web site users that are not included in the site total. Web site registration requests increased at various times during 2005, roughly correlating to the completion of S/CI training, as shown in Figure 10 below. Registration requests are

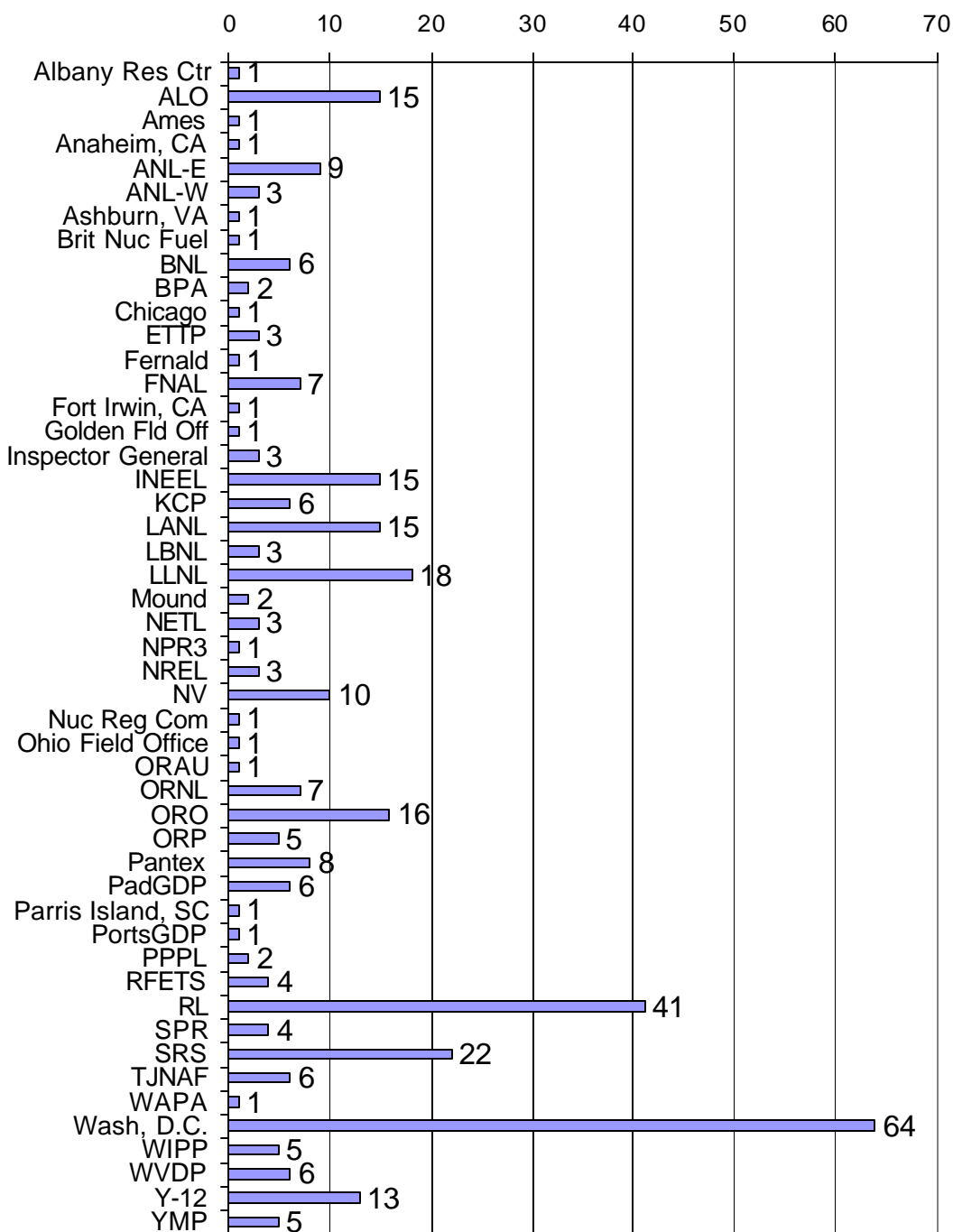


approved on a case-by-case basis, based on justification and information provided by the applicant.

**Figure 8. Number of DOE and Non-DOE S/C-DI Registered Web Site Users Through 2005**



**Figure 9. Sites with Registered Users for the S/C-DI Web Site by Facility Through 2005**



**Figure 10. S/C-DI Web Site Registration Applications Received Through 2005**

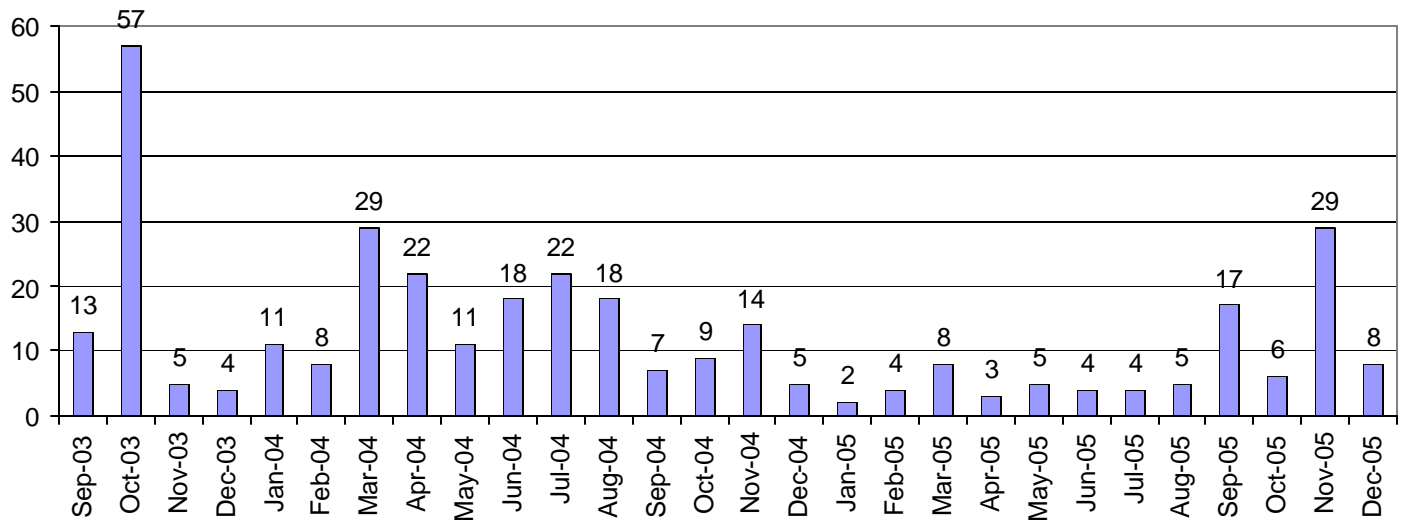
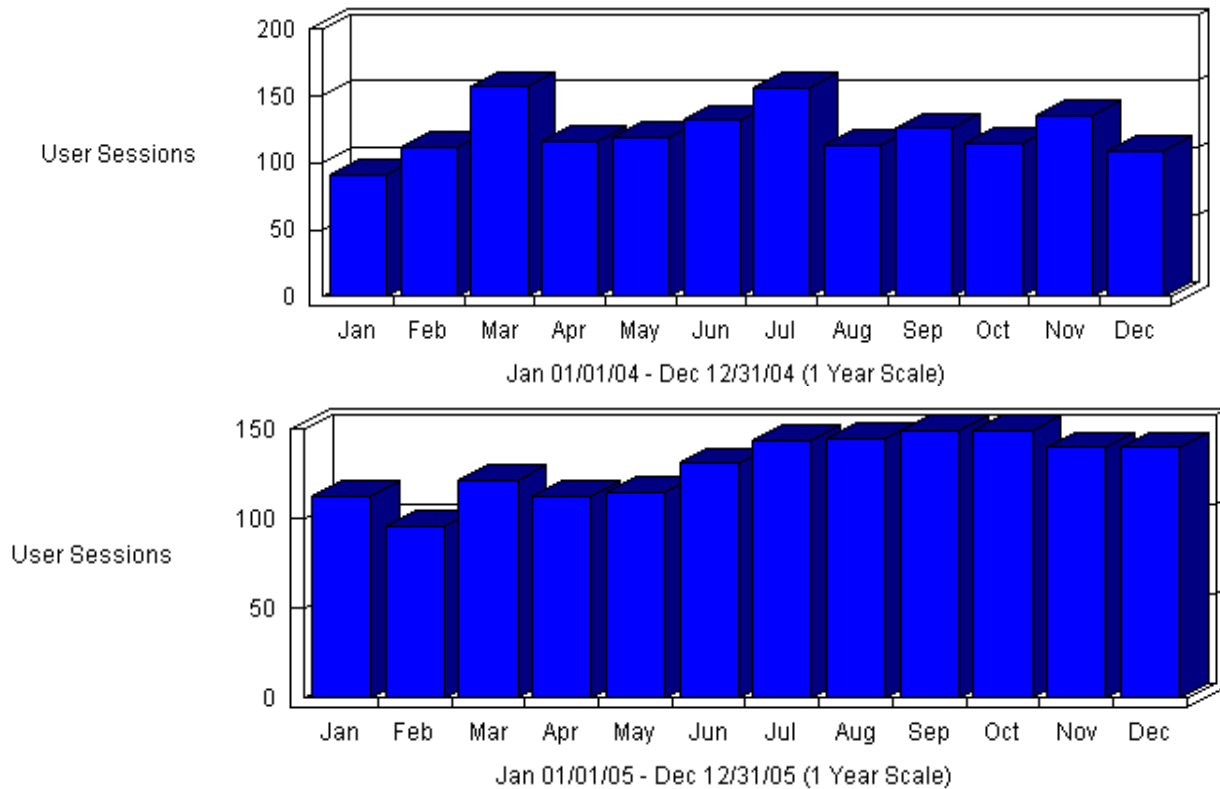


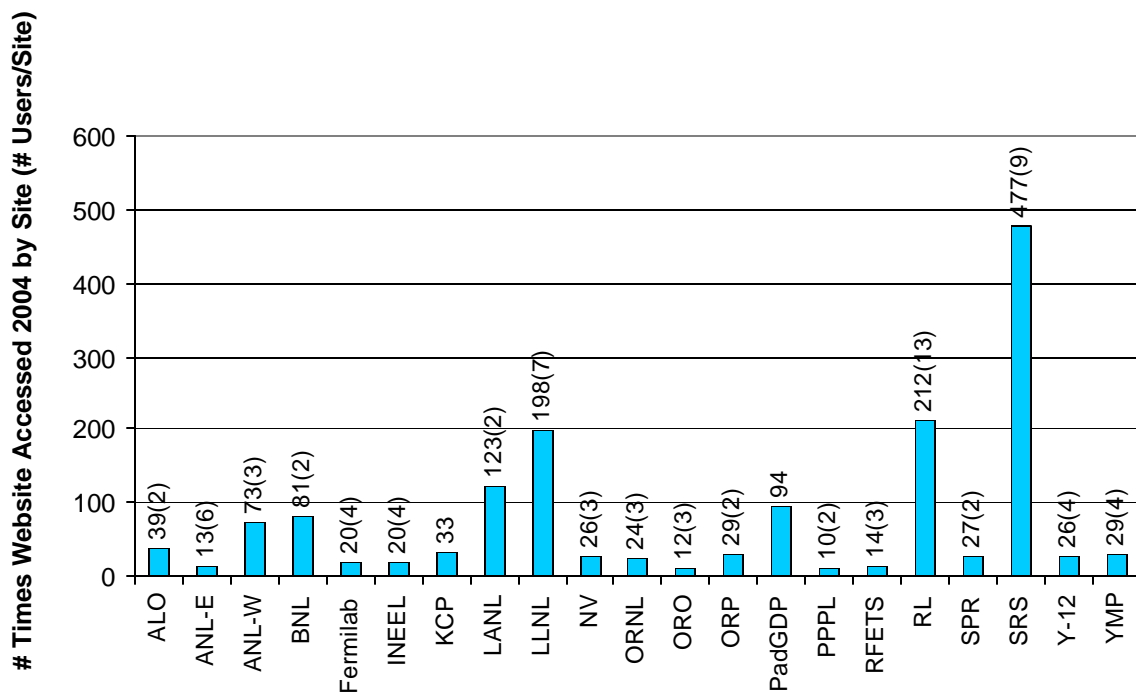
Figure 11 below illustrates the number of times the S/CI web site was accessed each month. It reflects a fairly even distribution in 2005 versus 2004. Such a distribution suggests that individuals may be performing S/CI-DI-related work activities on a routine basis, indicating that such activity is integrated into their daily work processes. The number of total sessions increased from 2,184 in 2004 to 2,578 in 2005.

**Figure 11. Number of Times the S/CI Web Site was Accessed Per Month, 2004 and 2005**

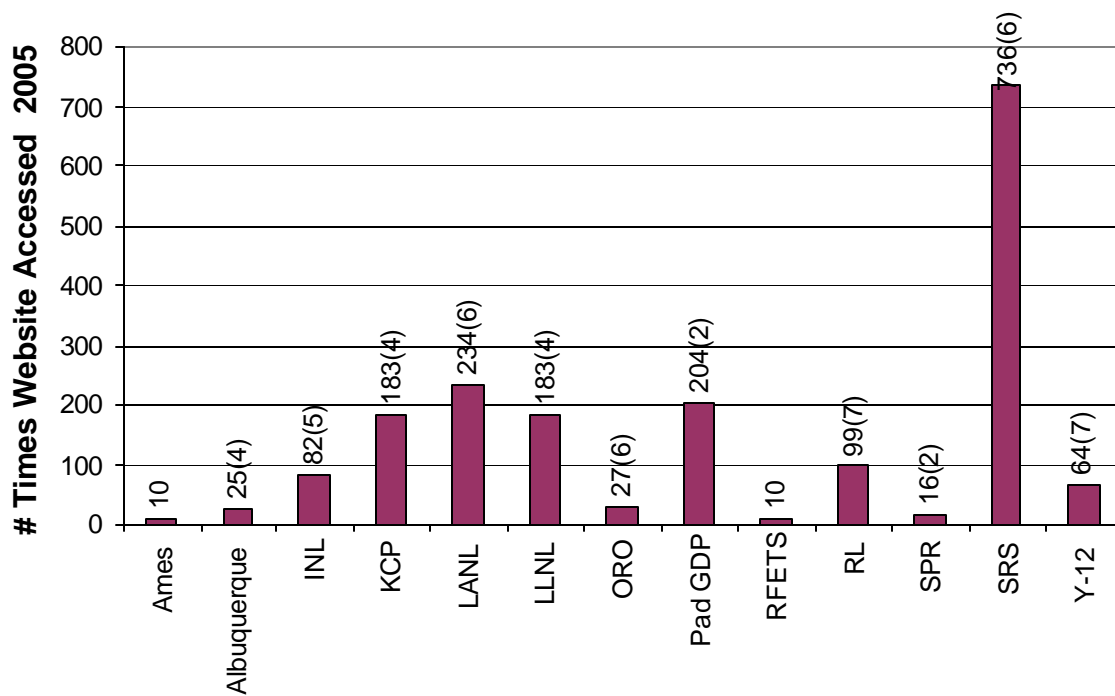


Figures 12a and b and 13a and b below display the DOE sites that accessed the web site and the number of sessions conducted in 2004 and 2005. During 2005, 127 DOE and military personnel conducted 2,578 user sessions on the web site, compared with 171 personnel conducting 2,184 sessions during 2004. During 2005, 16 field personnel from 13 of the 47 sites accessed the S/CI web site at least 10 times, and 45 field personnel from 23 DOE sites accessed the S/CI web site between 2 and 9 times. In contrast, during 2004, 34 field personnel from 21 of the 41 sites accessed the S/CI web site in 2004 at least 10 times, and 82 personnel from 10 DOE sites and 1 military site accessed the S/CI web site between 2 and 9 times. The data suggest that the increase in web site usage is, in part, due to 1) a dedicated smaller number of registered users from 2004 to 2005 that are accessing the website more frequently to keep apprised of items potentially impacting operations at their sites; and 2) an increased awareness and interest resulting from S/CI training conducted across the DOE Complex.

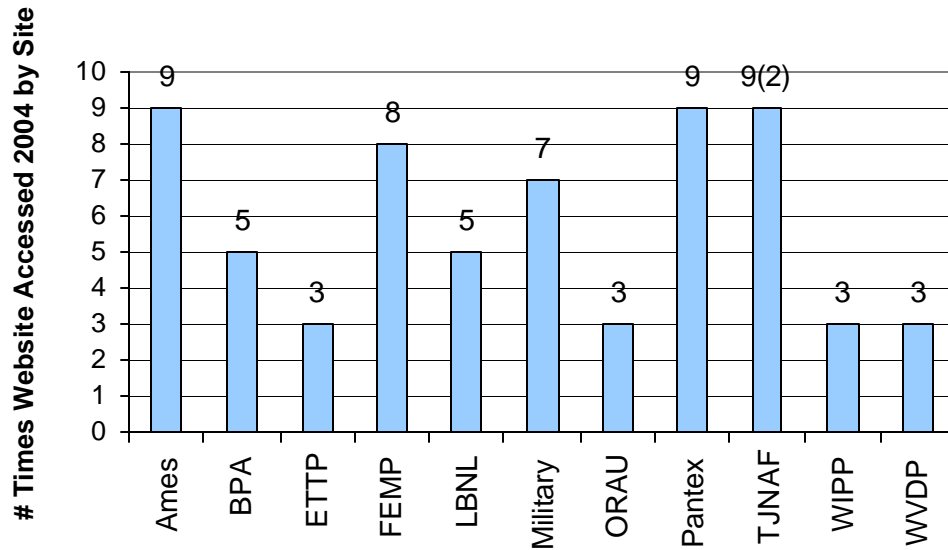
**Figure 12a. 2004 S/CI Website Access Sessions by Site (at least 10 per Year)**



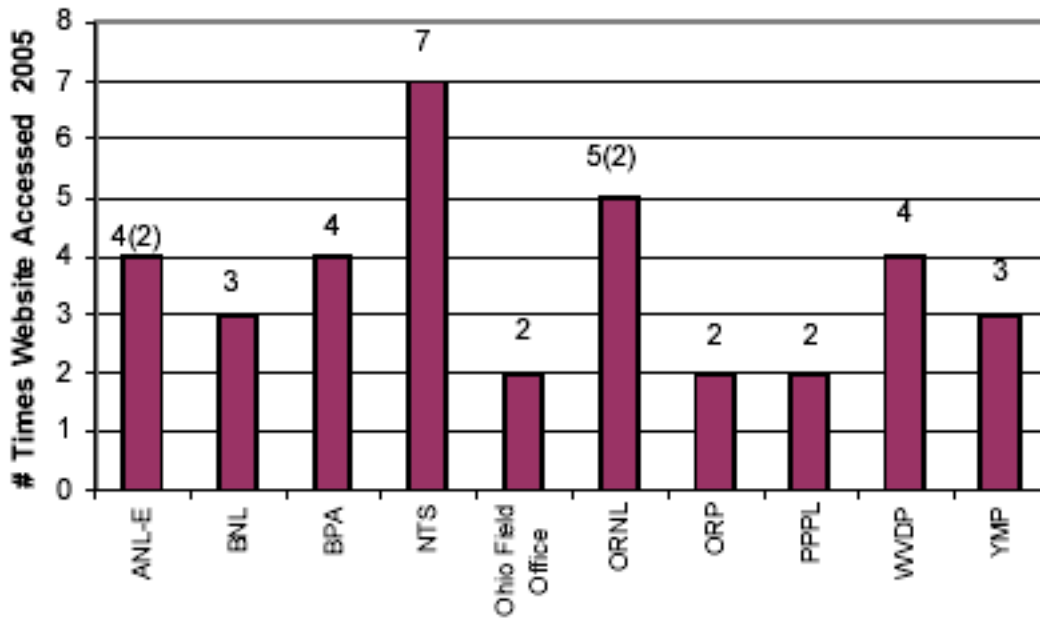
**Figure 12b. 2005 S/CI Website Access Sessions by Site (at least 10 per Year)**



**Figure 13a. 2004 S/CI Website Access Sessions by Site (between 2 and 9 per Year)**



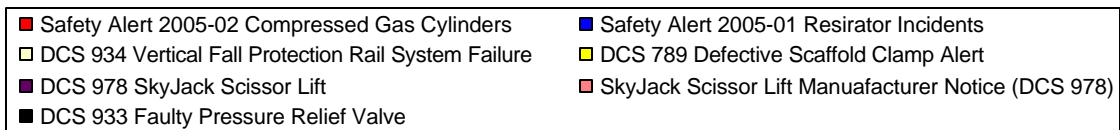
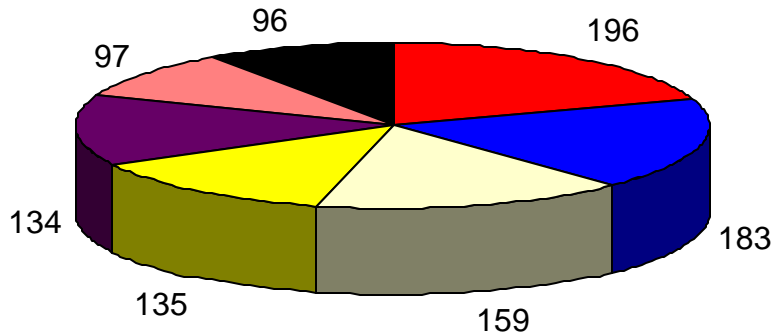
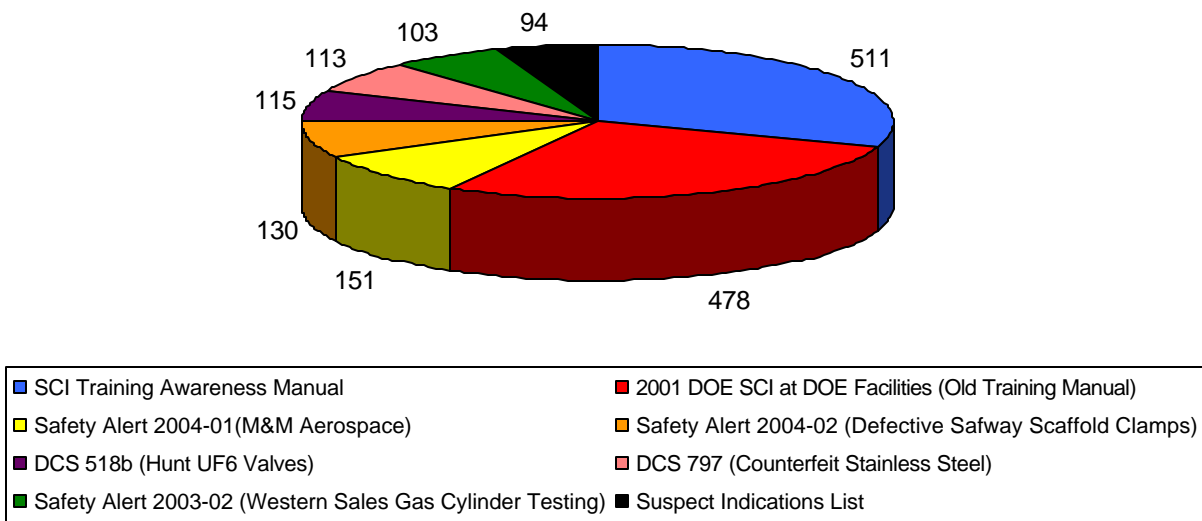
**Figure 13b. 2005 S/CI Website Access Sessions by Site (between 2 and 9 per Year)**



\*Note – Numbers in parentheses in Figures 12 and 13 represent the number of individuals at the site conducting the total listed web site sessions.

Figures 14a and 14b show the most downloaded documents from the web site, where the document was downloaded on the order of about 100 or more times in 2004 and 2005. During 2005, there were 1,196 downloads of the top 10 discrete documents, which represented about 16 percent of the total downloads for the year but only 3 percent of the 300 discrete documents downloaded. One hundred ninety-two discrete documents posted on the website were downloaded at least 10 times. Of these, 25 were downloaded at least 50 times during 2005, and 5 were downloaded more than 100 times. There were 7,366 total downloads of 300 documents during 2005.

**Figure 14a. Most Downloaded Documents from the S/C-DI Web Site in 2004**





**Figure 14b. Most Downloaded Documents from the S/C-DI Web Site in 2005**

In contrast, during 2004, there were 1,455 downloads of the top 10 discrete documents — representing about 20 percent of the total downloads for the year, but only 3 percent of the 300 discrete documents. There were 7,295 total downloads of 300 documents during 2004.

## APPENDIX A. ACRONYMS

ANL-E	Argonne National Laboratory – East
ANL-W	Argonne National Laboratory – West
BNL	Brookhaven National Laboratory
CH	Chicago Operations Office
DCS	Data Collection Sheet
DI	Defective Item
DNFSB	Defense Nuclear Facilities Safety Board
DOE	Department of Energy
EH	Office of Environment, Safety and Health
EH-1	Assistant Secretary for Environment, Safety and Health
EH-3	Office of Corporate Performance Assessment
ETTP	East Tennessee Technology Park
FCP	Fernald Closure Project
FEMP	Fernald Environmental Management Project
FNAL	Fermi National Accelerator Laboratory
GC	Office of General Counsel
GIDEP	Government-Industry Data Exchange Program
ID	Idaho Operations Office
IG	Office of the Inspector General
INL	Idaho National Laboratory
INPO	Institute of Nuclear Power Operations
KCP	Kansas City Plant
LANL	Los Alamos National Laboratory
LLNL	Lawrence Livermore National Laboratory
MCP	Mound Closure Project
MSA	Mine Safety Appliances Company
NBL	New Brunswick Laboratory
NETL	National Energy Technology Laboratory
NRC	Nuclear Regulatory Commission
NV	Nevada Operations Office

OE	Operating Experience
ORISE	Oak Ridge Institute for Science and Education
ORNL	Oak Ridge National Laboratory
ORO	Oak Ridge Operations
ORPS	Occurrence Reporting and Processing System
PGDP	Paducah Gaseous Diffusion Plant
PortsGDP	Portsmouth Gaseous Diffusion Plant
PNNL	Pacific Northwest National Laboratory
PPE	Personal protective equipment
PPPL	Princeton Plasma Physics Laboratory
PSO	Program Secretarial Office
PX	Pantex Plant
RFO	Rocky Flats Closure Project
RL	Richland Operations Office
RP	Hanford Office of River Protection
S/CI	Suspect/counterfeit item
SNL	Sandia National Laboratories
SR	Savannah River Site
TJNAF	Thomas Jefferson National Accelerator Facility
UF <sub>6</sub>	Uranium hexafluoride
WIPP	Waste Isolation Pilot Project
WV	West Valley Demonstration Project
Y-12	Y-12 Plant, Oak Ridge, TN
YM	Yucca Mountain Project

## APPENDIX B. DEFINITIONS

**Suspect/Counterfeit Items:** An item is suspect when visual inspection or testing indicates that it may not conform to established Government or industry-accepted specifications or national consensus standards or whose documentation, appearance, performance, material, or other characteristics may have been misrepresented by the supplier or manufacturer. A counterfeit item is one that has been copied or substituted without legal right or authority or whose material, performance, or characteristics have been misrepresented by the supplier or manufacturer. Items that do not conform to established requirements are not normally considered S/CI if nonconformity results from one or more of the following conditions (which must be controlled by site procedures as nonconforming items):

- defects resulting from inadequate design or production quality control;
- damage during shipping, handling, or storage;
- improper installation; deterioration during service;
- degradation during removal;
- failure resulting from aging or misapplication; or
- other controllable causes.

An item identified as S/CI may have one or more of the indications described above and not be fraudulent. If an item exhibits some of the indications listed above, it may warrant further investigation and be considered suspect. Contact with the supplier and/or manufacturer may help establish whether the item in question has a quality control problem or is actually fraudulent. (Reference: DOE Order 414.1C, *Quality Assurance*, and DOE G 414.1-3, *Suspect/Counterfeit Items Guide for Use with 10 CFR 830 Subpart A*, *Quality Assurance Requirements*, and *DOE O 414.1B*, *Quality Assurance* [now DOE O 414.1C]).

**Defective:** A defective item or material is any item or material that does not meet the commercial standard or procurement requirements as defined by catalogues, proposals, procurement specifications, design specifications, testing requirements, contracts, or the like. It does not include parts or services that fail or are otherwise found to be inadequate because of random failures or errors within the accepted reliability level

(Reference: DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, August 2003).

**Event:**

Something significant and real-time that happens (e.g., pipe break, valve failure, loss of power, environmental spill, earthquake, tornado, flood). (Reference: DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, August 2003).

**Occurrence:**

One or more (i.e., recurring) events or conditions that adversely affect, or may adversely affect, DOE (including the National Nuclear Security Administration) or contractor personnel, the public, property, the environment, or the DOE mission (Reference: DOE M 231.1-2, *Occurrence Reporting and Processing of Operations Information*, August 2003).

**Safety System:**

A safety system is a nuclear facility structure, system, or component, including a primary environmental monitor or portion of a process system, whose failure could adversely affect the environment, safety, or health of the public as identified by safety analyses (Reference: DOE Order 5480.30, *Nuclear Reactor Safety Design Criteria*, Change 1, March 2001).

## **APPENDIX C. SUSPECT INDICATIONS LIST**

A useful list that describes components with indications that are considered suspect can be found at <http://www.eh.doe.gov/sci> under the title *S/CI Training Awareness Manual*.

## **APPENDIX D. EXAMPLES OF SUSPECT/COUNTERFEIT ITEMS FOUND AT DOE SITES**

A photographic inventory of suspect items can be found at <http://www.eh.doe.gov/sci> under the title *S/CI Training Awareness Manual*. It highlights the recent discoveries at DOE and many of the S/CI found at DOE sites.

## APPENDIX E. REFERENCES

1. DOE Order 414.1C, *Quality Assurance* and DOE G 414.1-3 *Suspect/Counterfeit Items Guide for Use with 10 CFR 830 Subpart A, Quality Assurance Requirements, and DOE O 414.1B, Quality Assurance* [now DOE O 414.1C] <http://www.directives.doe.gov>
2. *Suspect Counterfeit Items Process Guide* <http://www.eh.doe.gov/sci>
3. Office of Management and Budget Circular 91-3 <http://www.eh.doe.gov/sci>
4. *Suspect Counterfeit Items Training Awareness Manual* <http://www.eh.doe.gov/sci>



The first part of the paper discusses the importance of the research and the objectives of the study. It then presents a literature review of the existing research on the topic. The second part of the paper describes the methodology used in the study, including the data collection and analysis techniques. The third part of the paper presents the results of the study, and the fourth part discusses the conclusions and implications of the findings. The paper is organized into several sections, each of which is clearly labeled and easy to follow. The writing is clear and concise, and the arguments are well-supported by evidence. The paper is a valuable contribution to the field and is highly recommended for reading.